



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/635,077	08/06/2003	Daniel Paul Beaman	AUS920030462US1	7219
35525	7590	09/09/2004	EXAMINER	
IBM CORP (YA)			CHAN, EMILY Y	
C/O YEE & ASSOCIATES PC				
P.O. BOX 802333			ART UNIT	
DALLAS, TX 75380			PAPER NUMBER	
			2829	

DATE MAILED: 09/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/635,077	Applicant(s) BEAMAN ET AL	
	Examiner Emily Y Chan	Art Unit 2829	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claims 14-27 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected claims, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 7-14-04.

Claims 1-13 are presented for examination.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-5, 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gaasch et al (439).

1. Regarding to claims 1 and 7-8, Gaasch et al (439) disclose a method and temperature control device for an electronic component (see Figs. 1-3 and 16) as claimed, comprising:

a source of chilled fluid (290);

A cold plate (204) connected to the source of chilled fluid source (290) such that the temperature of cold plate (204) is reduced by the chilled fluid (290);

at least one heater (206) which is a cartridge heater is connected to the cold plate (204) such that the at least one heater (206) supplies heat to the cold plate (204) (see page 4, paragraph 0038, lines 6-10);

Wherein the cold plate (204) is placed in proximity to the integrated circuit (DUT 102) to change the temperature of the integrated circuit (DUT 102) (see page 2, paragraph 0025).

The difference between Gaasch et al (439) 's system and the claimed invention is that Gaasch et al (439) use a heat sink instead of a cold plate. However, it would have been obvious to one of ordinary skill in the art to select a cold plate from the heat sink in Gaasch et al (439) 's system because the heat sink includes a cold plate and other cooling means (see MPEP 2144. 06).

2. Regarding to claims 3 and 9, Gaasch et al (439) disclose that their at least one Heater (206) is responsive to a chip temperature sensor (208) of the integrated circuit (DUT 102) through a feedback loop (see Fig. 1 and page 2, paragraph 0026, line 9, "feedback signals").

3. Regarding to claims 4 and 11, Gaasch et al (439) disclose that the cold plate (204) is pressed against the integrated circuit (DUT 102) (see page 3, paragraph 0031, lines 8-11) and a gas (see page 2 paragraph 0029, line 3 "air") is injected at the cold plate (204) interface (see Fig. 2 and page 3, paragraph 0034, line 11-12).

4. Regarding to claims 5 and 12, Gaasch et al (439) disclose mating surface of the DUT for contacting with the cold plate (204) (see page 2, paragraph 0031), therefor, it meets the claimed feature that a surface of the cold plate is pressed against a surface of the integrated circuit (DUT 102) by a high pressure load. Gaasch et al (439) also disclose that the size and the shape of the heating/cooling assembly maybe suitably configured to mate with the size and shape of the particular DUT (see page 3,

Art Unit: 2829

paragraph 0031, last nine lines), which meets the claimed limitation that the cold plate has smaller in area than the surface of the integrated circuit (see MPEP 2144.04 IV).

Claims 2 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gaasch et al (439) in view of Hafer (556).

5. Gaasch et al (439) do not disclose a temperature control of the device under test (DUT 102) is accomplished on a coarse level and on a fine level.

Hafner ('556) discloses a coarse and fine temperature control system (see abstract, line 2) for measuring the electrical characteristics of electronic components (see Figs 1 and 2) and exclusively teaches a coarse control means to adjust fluid temperature and/or fluid rate (see Col. 7, lines 1-24) and a fine control means to alter the output of at least one heater (3) (see claim 2).

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to incorporate the coarse and fine temperature control mechanism of Hafner ('556) into Gaasch et al (439)'s system for the expected benefit of providing the air temperature in test chamber highly stable in an advanced measuring system as disclosed by Hafner ('556) (see Field Of Invention and Col. 3, lines 11-12).

6. Claims 6 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gaasch et al (439) in view of Kainuma et al ('319).

Gaasch et al (439) do not disclose a chilled fluid pipes being covered with insulation such that condensation does not form on the pipes. Kainuma et al ('319) disclose a IC testing apparatus (see Figs 1 and 5) and exclusively teach chilled fluid

Art Unit: 2829

pipes (224) which has a structure of interposing a heat insulation member 224c and thereby condensation due to cold air can be prevented (see Col. 11, lines 17-20).

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to incorporate the Kainuma et al ('319) 'chilled fluid pipes being covered with insulation into Gaasch et al (439)'s system for the expected benefit of preventing condensation due to cold air in IC testing apparatus as disclosed by Kainuma et al ('319) (see Col. 11, lines 17-20).

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Needham ('868) discloses a method and an apparatus (see Fig. 1B) for testing integrated circuit and exclusively teaches a cold plate (110) connected to a source of chilled fluid (114) and to DUT (20)

Yonezawa et al ('894) disclose a temperature control apparatus for testing integrated circuit comprising a source of chilled fluid (35), a cooler (14), at least one heater (13) connected to the cooler (14).

Burward-hoy (785) discloses a method and apparatus for rapidly varying the operating temperature of semiconductor device in a testing environment comprising a cold plate, temperature sensor and heater.

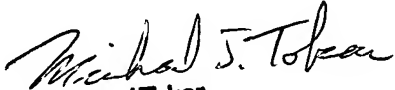
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emily Y Chan whose telephone number is 571-272-1956. The examiner can normally be reached on 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Tokar can be reached on 571-272-1812. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ec
9-2-04


Michael Tokar
Supervisory Patent Examiner
Technology Center 2800